IN THE CLAIMS

Please amend claims 17 and 32.

17. (twice amended) A drill string comprising a plurality of downhole components, each downhole component having two ends, the plurality of downhole components each detachably joined one to another at their respective ends;
each downhole component having at least two coupled inductive transmission devices, with at least one transmission device mounted in a reference plane in each end of the downhole component such that the transmission device is paired with and spaced a distance from the adjacent transmission device in the adjacent reference plane in the adjacent joined downhole component, wherein the distance between each set of paired transmission devices is substantially constant, forming a tuned electrical communication system in the plurality of downhole components.

18. (previously added) The drill string of claim 17, wherein the downhole components comprise lengths of drill pipe to form a drill string for oil, gas, and geothermal well drilling.

19. (previously added) The drill string of claim 17, wherein the downhole components are detachably joined one to another with tool joints wherein, when each tool joint is connected under a nominal makeup torque, the distance between an internal shoulder of a box end and an external face of a pin end of the tool joint is between .003 and .010 inches.

20. (previously added) The drill string of claim 19, wherein the downhole components comprise lengths of drill pipe to form a drill string for oil, gas, and geothermal well drilling.

21. (previously added) The drill string of claim 18, wherein the electrical communication system comprises a combination of power transmission and data transmission.

22. (previously added) The drill string of claim 19, wherein, when the tool joint is made up under a nominal makeup torque, the predetermined distance between the paired transmission devices is less than .010 inches.

23. (previously added) The drill string of claim 19, wherein the makeup torque is at least approximately 0.5 times the torsional yield strength of the tool joint.

24. (previously added) The drill string of claim 19, wherein the tool joint is capable of sustaining an additional torque of approximately 1.25 times the makeup torque.

25. (previously added) The drill string of claim 19, wherein, when the transmission devices are located within the box end of the drill pipe, a cross-sectional area of a counterbore, the internal shoulder, and a tapered thread are further proportioned to sustain a nominal makeup torque;

26. (previously added) The drill string of claim 19, wherein, when the transmission devices are located within a nose section of a pin end of the drill pipe, the nose section, a tapered thread, a base section, and an external shoulder are further proportioned to sustain a nominal makeup torque.

27. (previously added) The drill string of claim 25, wherein said joint is capable of sustaining an additional torque of approximately 1.25 times the nominal makeup torque.

28. (previously added) The drill string of claim 26, wherein said joint is capable of sustaining an additional torque of approximately 1.25 times the nominal makeup torque.

29. (previously added) The drill string of claim 19, wherein, when an additional torque of approximately 1.25 times the nominal torque is applied to the joint, the predetermined distance between the paired transmission devices is less than .010 inches.

30. (previously amended) The drill string of claim 17, wherein a device communicating with the tuned electrical communication system is selected from the group consisting of conductors, accelerometers, potentiometers, gamma ray sensors, thermocouples, pressure transducers, inclinometers, magnetometers, chemical sensors, and acoustic transducers.

31. (previously canceled) The drill string of claim 16, wherein the transmission device is selected from the group consisting of conductors, optical, electrical, electromagnetic, and acoustic sending and receiving devices.

32. (twice amended) A drill string comprising a plurality of downhole components, each downhole component having two ends, the plurality of downhole components each detachably joined one to another at their respective ends;
each downhole component having at least two coupled inductive transmission devices, with at least one transmission device mounted in a reference plane in each end of the downhole component such that the transmission device is paired with and spaced a distance from the adjacent transmission device in the adjacent reference plane in the adjacent joined downhole component, wherein the distance between each set of paired transmission devices is substantially constant, forming a tuned electrical communication system in the plurality of downhole components; wherein the downhole components comprise lengths of drill pipe to form a drill string for oil, gas, and geothermal well drilling which are detachably joined one to another with tool joints wherein, when each tool joint is connected under a nominal makeup torque, the distance between an internal shoulder of a box end and an external face of a pin end of the tool joint is between .003 and .010 inches.

33. (previously added) The drill string of claim 32, wherein the downhole components comprise lengths of drill pipe to form a drill string for oil, gas, and geothermal well drilling.

34. (previously added) The drill string of claim 32, wherein the electrical communication system comprises a combination of power transmission and data transmission.

35. (previously added) The drill string of claim 32, wherein, when the tool joint is made up under a nominal makeup torque, the predetermined distance between the paired transmission devices is less than .010 inches.

36. (previously added) The drill string of claim 32, wherein the makeup torque is at least approximately 0.5 times the torsional yield strength of the tool joint.

37. (previously added) The drill string of claim 32, wherein the tool joint is capable of sustaining an additional torque of approximately 1.25 times the makeup torque.

38. (previously added) The drill string of claim 32, wherein, when the transmission devices are located within the box end of the drill pipe, a cross-sectional area of a counterbore, the internal shoulder, and a tapered thread are further proportioned to sustain a nominal makeup torque;

39. (previously added) The drill string of claim 32, wherein, when the transmission devices are located within a nose section of a pin end of the drill pipe, the nose section, a tapered thread, a base section, and an external shoulder are further proportioned to sustain a nominal makeup torque.

40. (previously added) The drill string of claim 38, wherein said joint is capable of sustaining an additional torque of approximately 1.25 times the nominal makeup torque.

41. (previously added) The drill string of claim 39, wherein said joint is capable of sustaining an additional torque of approximately 1.25 times the nominal makeup torque.

42. (previously added) The drill string of claim 32, wherein, when an additional torque of approximately 1.25 times the nominal torque is applied to the joint, the predetermined distance between the paired transmission devices is less than .010 inches.

43. (previously added) The drill string of claim 32, wherein a device communicating with the tuned electrical communication system is selected from the group consisting of conductors, accelerometers, potentiometers, gamma ray sensors, thermocouples, pressure transducers, inclinometers, magnetometers, chemical sensors, and acoustic transducers.

44. (previously canceled) The drill string of claim 32, wherein the transmission device is selected from the group consisting of conductors, optical, electrical, electromagnetic, and acoustic sending and receiving devices.